

KARIMGANJ COLLEGE

Revised Syllabus of

Advanced Computer Literacy Programme (Adv.-CLP)

(Career Oriented Skill Enhancement Diploma
Course in Computing for TDC students)

Duration of the Course: Three Years (Six Semester)

Eligibility: H.S. (10 +2 level)



Conducted By
Karimganj College Computer Centre
In Association with
Department of Computer Science & Application
Karimganj College

Objective of the Course

The objective of the course is to introduce career and market oriented, skill enhancing add-on courses that have utility for job, self-employment and empowerment of the students. At the end of three years, the students are equipped with a Diploma in an orientation course along with a conventional degree in Science/Arts/Commerce. Programme has been renamed as Skill Enhancement Programme since UGC is promoting Skill Enhancement for providing students with higher and better levels of skills to adjust more effectively to the challenges and opportunities of world of work.

DIPLOMA IN COMPUTING

COURSE CONTENTS

Year	Semester	Subject	Contact Hours
1	1	Office Automation Tools	<i>24 credits 45 mins per credit</i>
	2	Introduction to Programming with Python Language	
2	3	Operating System Concept	
	4	<u>Elective 1:</u> Computerized Accounting <u>Elective 2:</u> Data Analytics using R Programming	
3	5	Web Designing and Publishing	
	6	<u>Elective 1</u> Multimedia & Animation <u>Elective 2</u> Mobile Application Development <u>Elective 3</u> PC Assembling and Networking <u>Elective 4</u> Introduction to Internet of Things (IoT) and its Applications	

FIRST YEAR

Semester 1 **Office Automation Tools**

Objective: *The module is designed to equip a student to use computers for professional as well as day to day use. It provides theoretical background as well as in depth knowledge of Software/ packages and acquires confidence in using computers in Office and General Life.*

Unit 1: **Word Processing:** Word Processing, their usage, details of word, processing screen, Opening, saving and printing a document including pdf files, Document creation, formatting of text, paragraph and whole document, Inserting Header and Footer on the document, Finding text on a word document and correcting spellings, Inserting and manipulating, tables, enhancing table using borders and shading features, Preparing copies of a document labels etc. for sending various recipients using Mail Merge.

Software Exposure: **Proprietary Software:** MS-Word 2013

Open Source Software: Apache OpenOffice
Writer/ LibreOffice writer

Unit 2: **Spreadsheet:** Basic Knowledge of Spreadsheet Processing, their usage, details of Spreadsheet screen, Opening, saving and printing a Spreadsheet, Spreadsheet creation, inserting and editing data in cells, sorting and filtering of data, Inserting and deleting rows /columns, Applying basic formulas and functions, Preparing chart to represent the information in a pictorial form.

Software Exposure: **Proprietary Software:** MS-Excel 2013

Open Source Software: Apache OpenOffice
Calc/ LibreOffice Calc

Unit 3: **Presentation:** Basic Knowledge of PowerPoint presentations, Opening/saving a presentation and printing of slides and handouts, Manipulating slides to enhance the look of the slides as well as whole presentation by inserting a picture, objects, multimedia formatting etc., Running a slide show with various transitions.

Software Exposure: **Proprietary Software:** MS-Powerpoint 2013

Open Source Software: Apache OpenOffice's
Impress / LibreOffice's Impress

Semester 2

Introduction to Programming with Python Language

Objective: *Python is easy to use, powerful and versatile, making it a great choice for developers. Python is used widely in different areas likes building Raspberry Pi applications, writing script program for desktop applications, configuring servers, developing machine learning & data analytics applications and developing web applications.*

- Unit 1: Basic concept of Programming, Flowchart, Algorithms, Simple problems.
Introduction to Python: Understand features of Python that make it one the most popular languages in the industry, Understand structure of Python problem, and understand the areas where Python is used.
- Unit 2: Operators, Expressions and Python Statements: Assignment statement, expressions, Arithmetic, Relational, Logical, Bitwise operators and their precedence, Conditional statements: if, if-else, if-elif-else; simple programs, Notion of iterative computation and control flow –range function, While Statement, For loop, break statement, Continue Statement, Pass statement, else, assert.
- Unit 3: Sequence Data Types: Lists, tuples and dictionary, (Slicing, Indexing, Concatenation, other operations on Sequence data type), concept of mutability, Examples to include finding the maximum, minimum, mean; linear search on list/tuple of numbers, and counting the frequency of elements in a list using a dictionary.

SECOND YEAR

Semester 3 Operating System Concept

Objective: *Operating system manages all of the software and hardware on the computer. The main objective of this content is to make the computer system convenient to use in an efficient manner as well as provide users a convenient interface to use the computer system.*

- Unit 1: Basics of Operating system, Operating Systems for Desktop and Laptop, Operating Systems for Mobile Phone and Tablets, User Interface for Desktop and Laptop.
Windows 10 – Task Bar, Icons & shortcuts, Running an Application, Operating System Simple Setting, Using Mouse and Changing its Properties, Changing System Date and Time, Changing Display Properties, To Add or Remove Program and Features, Adding, Removing & Sharing Printers, File and Folder Management, Types of file Extensions, new features like pin, Cortana , Your Phone App, Cloud Clipboard, New Screen Capture Utility, New Search Panel from Start Button, Dark Mode for File Explorer, Stop Auto play in Edge Browser and More, Swipe Touch Text Entry With SwiftKey, New Game Bar, New Skype Features, Windows Security.
- Unit 2: Linux (Fedora/Ubuntu) – concept, interface, installation, basic commands, etc.

Semester 4

Elective 1: Computerized Accounting

Objective: *Computerized Accounting involves making use of computers and accounting software to record, store and analyze financial data. A computerized accounting system brings with it many advantages that are unavailable to analog accounting systems.*

- Unit 1: Basic Concept of accounting – Ledger, Voucher, Journal, Balance Sheet, Cash book/ bank book, Trial Balance, Profit & Loss Account.
- Unit 2: Computerized accounting using Tally – company creation, Balance sheet creation, cash book, trial balance & profit and loss account.

Elective 2 Data Analytics using R Programming

Objective: *This is an introductory content on how to use the R programming language and software environment for data manipulations and data munging, exploratory data analysis and data visualizations.*

- Unit 1: Downloading and installing R, History of R, R packages, Brief Overview on R Coding Tools: RStudio, git, GitHub.
- Unit 2: R Syntax Basics: Constants, operators, functions, variables, Random numbers, Vectors and vector indexing, Simple descriptive stats, Loops, Conditional expressions.
- Unit 3: Basic Data Transformations: Create new variables in a **data.frame**, Filter rows and columns, merging datasets, Filtering and ordering data, Summaries and aggregates, Plots outside of Excel: dotchart and violinplot examples, The Grammar of Graphics in R with ggplot2.

THIRD YEAR

Semester 5 Web designing and Publishing

Objective: *This module is designed to start web designing, irrespective of knowledge currently have in this area. The businesses, nowadays, are heavily relying on web based applications. The purpose of this module is to provide skill to students in designing layouts of web sites. By the end of this module, student will be able to describe the structure and functionality of the World Wide Web, create web pages using a combination of HTML, CSS, and JavaScript.*

- Unit 1: Creation of Static web page – HTML Programming: Basic Structure of HTML , Head Section and Elements of Head Section, Formatting Tags :Bold , Italic, Underline, Strikethrough, Div, Pre Tag Anchor links and Named Anchors Image Tag, Paragraphs, Comments, Tables : Attributes –(Border, Cell padding, Cell spacing , height , width), TR, TH, TD, Row span, Col span Lists : Ordered List , Unordered List , Definition List, Forms, Form Elements, Input types, Input Attributes, Text Input Text Area, Dropdown, Radio buttons , Check boxes ,Submit and Reset Buttons Frames : Frameset , nested Frames.
- Unit 2: CSS: Introduction to CSS, Types of CSS, CSS Selectors : Universal Selector, ID selector, Tag Selector, Class Selector, Sub Selector, Attribute Selector, Group Selector, CSS Properties : Back Ground properties , Block Properties , Box properties , List properties , Border Properties , Positioning Properties, CSS Lists CSS Tables.
- Unit 3: Concept of Client and Server side scripting: Java Script, PHP.

Semester 6
Elective 1
Multimedia & Animation

Objective: *This course aims to introduce the fundamental elements of multimedia. It will provide an understanding of the fundamental elements in multimedia. The emphasis will be on learning the representations, perceptions and applications of multimedia. Software skills and hands on work on digital media will also be emphasized.*

- Unit 1: Introduction to Multimedia: What is multimedia, Components of multimedia, Web and Internet multimedia applications, Transition from conventional media to digital media. Animation basics, Concept of Morphing.
- Unit 2: Digitization of sound, audio file format, Sound synthesis, Compression and transmission of audio on Internet, Image Compression and File Formats :GIF, JPEG, JPEG 2000, PNG, TIFF, EXIF, PS, PDF, Basic Image Processing using Photoshop, Use of image editing software.
- Unit 3: Exposure on open source animation software – 2D animation like pencil/ Synfig studio/ Stykz/ Creation/ Ajax animator.

Elective 2
Mobile Application Development

Objective: *This module aims to provide the knowledge about mobile devices and mobile platforms, mobile operating systems and their architecture; how to prepare a mobile application for distribution, and also understands the need for continuous improvement of his/her skills due to the rapidly changing environment of mobile devices.*

- Unit 1: Introduction: What is Android, Android versions and its feature set The various Android devices on the market , The Android Market application store , Android Development Environment - System Requirements, Android SDK, Installing Java, and ADT bundle - Eclipse Integrated Development Environment (IDE), Creating Android Virtual Devices (AVDs).

- Unit 2: Android Architecture Overview and Creating an Example Android Application: Android Runtime – Core Libraries, , Java Interoperability Libraries, Android Libraries, Application Framework, Creating a New Android Project ,Defining the Project Name and SDK Settings, Project Configuration Settings, Configuring the Launcher Icon, Creating an Activity, Running the Application in the AVD, Stopping a Running Application, Modifying the Example Application, Reviewing the Layout and Resource Files,
- Unit 3: Android Software Development Platform, Understanding Java SE and the Dalvik Virtual Machine, The Directory Structure of an Android Project, Common Default Resources Folders, The Values Folder, Leveraging Android XML, Screen Sizes, Launching Your Application: The AndroidManifest.xml File, Creating Your First Android Application

Elective 3

PC Assembling and Networking

Objective: *This module helps to acquire basic knowledge in computer hardware and peripherals for installation, PC assembly, trouble shooting and maintenance including system management and its backup and to undertake disaster prevention, a basic knowledge of TCP/IP networks work group, internet and intranet.*

- Unit 1: Basics of computer, Organization of computer, Software and hardware, Input/output devices, Network topologies, LAN, WAN, MAN, PAN, CAN, internet & intranet. Networking Model: The OSI model, TCP/IP model (overview), Network adapters, Introducing protocols, Cabling and troubleshooting. Introduction to various networking devices.
- Unit 2: Inside the PC: Opening the PC and identification, Study of different blocks, Assembling and disassembling. Installation of OS.
- Unit 3: Network basic and configuration: Setting IP addresses, Sharing files and folders, Network troubleshooting.

Elective 4

Introduction to Internet of Things (IoT) and its Applications

Objective: *The module is designed to equip the students to understand the basics of connected world that is Internet of Things (IoT) and its applications. IoT primarily refers to the connected and smarter world having physical and virtual objects with some unique identities. IoT applications spans across domains of industrial control, retail, energy, agriculture, etc. According to experts forecast, IoT ecosystem will have 50 billion devices/things by 2020.*

- Unit 1: Introduction to Internet of Things – applications/devices, protocols, communication model: Introduction - Overview of Internet of Things(IoT), the characteristics of devices and applications in IoT ecosystem, building blocks of IoT, Various technologies making up IoT ecosystem.
- Unit 2: Sensors, Actuators and Microcontrollers: Sensor - Measuring physical quantities in digital world e.g. light sensor, moisture sensor, temperature sensor. Actuator – moving or controlling system e.g. DC motor, different type of actuators. Controller – Role of microcontroller as gateway to interfacing sensors and actuators, microcontroller vs microprocessor, different type of microcontrollers in embedded ecosystem.
- Unit 3: Building IoT applications: Introduction to Arduino IDE – writing code in sketch, compiling-debugging, uploading the file to Arduino board, role of serial monitor.